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THANKS!

Dear QTS:

The sample issue of QuarTerS that you sent with the Textwriter program ordered from you is very good. Enclosed is a check for a subscription. Please start with the Spring-85 issue.

By the way your service on this order was terrific, something I can't say about other suppliers for the Sinclair. The textwriter works well for the Timex, all around a good product for a fair price.

For your interest and my own pleasure allow me to let you know what is happening in Reno, Nevada. There is a small group of users that meet informally here, four users to be exact. Of course there may be others that I'm not aware of.

When I was given a TS1000 for Christmas it was my first computer. Since then I've been able to purchase a TS1500 for \$29.95 from Hal-Tronix, PO Box 1101, Southgate, MI 48195 (313)285-1782. This has proven to be a much better way for me to go. But in the meantime with three children under six the 1000 continues to work for them. Since the 1000 is so easy to operate for them it occurred to me that it was the ideal machine for their school.

Well through newspaper ads, BBS posts, Etc. I've been able to gather six 1000's for their school. That project is moving right along with the machines most recently set up at the school fair. Some software was purchased and some written by me and we now have a mini computer course based around the 1000.

my personal set up now includes the TS1500, 2040 printer, Westridge 2050 Modem and a panasonic slimline tape recorder. I mention the Panasonic because in every book on the Timex loading problems are usually mentioned. Well with this machine I've never had even one load problem even with tapes bought from outside sources.

One final thought before this file fills up. The modem really opened a new world for me and I urge anyone with a computer to get one. This was how it was possible to connect with other Timex users. By the way, C. P. Morrissey from the Users Group in S. F., California advises me that there is a Smart Term program available for the TS1000/1500 computers from: Weymil Corp., PO Box 5904, Bellingham, WA 98227.

Feel free to publish any part of this as your needs require. One need the school still has is for any Public Domain software of an educational nature for young children.

Well, thanks for the Textwriter that allowed this letter, it is much better than typing a screen at a time on my terminal program.

Sincerely,

Steve Hughes  
7360 W. 4th ST, #13  
Reno, NV 89523

Dear Steve: I hope that some of our readers can help with your very worth while project; teaching young children about the wonders of computing. Some of our readers should be able to help you with software for young children.

We also use a Panasonic recorder and have found it to be the best available for all of our Timex machines. We can load any program with our recorder, which most other recorders can not do.

I agree completely with your statements on the use of a Modem. You have not felt the power of your computer until you have hooked it up to a Modem. By the way we now offer the Westridge Modem which can be used on any of the Timex computers. If I can help in any way please let me know. Good Luck!

Sincerely,

Bill Johnson

**MORE ON READ/DATA  
FOR THE TS1000**  
by Donna Zelzer

Bill Johnson's article on READ/DATA in the Spring '85 QTS prompted this article. My READ/DATA system is based on the same principles (string slicing with commas as markers), but I handle it a little differently. For starters, I put it in a subroutine.

Program 1 is the subroutine plus necessary counters. I have this program saved on tape and just load it before I start to work on a program that will need READ/DATA.

Once loaded, I delete lines 1 and 2 and change line 9998 to the name of the program I'm working on. (Notice line 9999, which causes the program to autolist after loading. This is useful when you're working on a long program that you'll want to save several times during the process of development).

Program 2 is an example of how to use the subroutine in a program. Here's how it works:

LINE 10: Assigns variable RE the value of the first line number of the subroutine. This saves memory because GOSUB RE uses fewer bytes than GOSUB 9000.

**READ/DATA PROGRAM 1**

```

1 REM      P1/P2 ARE POINTERS
   D$ IS DATA STRING
   R$ IS PART OF DATA
   STRING THAT IS READ

2 REM      USE GOSUB RE
10 LET RE=9000
20 LET P1=1
30 LET P2=1
40 REM      SIMULATED READ
50 IF D$(P1)="", THEN GOTO 903
60
9010 LET P1=P1+1
9020 GOTO 9000
9030 LET R$=D$(P2 TO P1-1)
9040 LET P1=P1+1
9050 LET P2=P1
9060 RETURN
9070 STOP
9080 SAVE "READDATA/1"
9090 LIST

```

LINES 20 and 30: Initialize the pointers.

LINE 50: Assigns the data to the variable D\$.

**READ/DATA PROGRAM 2**

```

1 REM      SAMPLE PROGRAM FOR
READ/DATA
10 LET RE=9000
20 LET P1=1
30 LET P2=1
40 REM      HOLDS THE DATA
50 LET D$="JOHN,21,SUE,14,MIKE
,42,PHIL,7,MARY,34,"
60 REM      GOES TO ASSIGN VALUES
70 DIM W$(5,4)
80 DIM N(5)
90 FOR X=1 TO 5
95 GOSUB RE
100 LET W$(X)=R$
105 GOSUB RE
110 LET N(X)=VAL R$
115 PRINT W$(X);" IS ";N(X);" Y
EARS OLD."
120 NEXT X
130 REM      ACCORDING TO DS
140 LET D$=D$+"CATS,6,3,3,HATS,
10,2,8,PENS,25,15,10,"
150 DIM Z$(3,4)
160 DIM Z(3,3)
170 FOR X=1 TO 3
180 GOSUB RE
190 LET Z$(X)=R$
200 FOR Y=1 TO 3
210 GOSUB RE
220 LET Z(X,Y)=VAL R$
230 NEXT Y
240 PRINT "I HAVE ";Z(X,1);" "
Z$(X);" ";Z(X,2);" BIG, ";Z(X,3)
"; SMALL."
250 NEXT X
260 STOP
8999 REM      SIMULATED READ
9000 IF D$(P1)="", THEN GOTO 903
9010 LET P1=P1+1
9020 GOTO 9000
9030 LET R$=D$(P2 TO P1-1)
9040 LET P1=P1+1
9050 LET P2=P1
9060 RETURN

```

**A RUN OF READ/DATA PROGRAM 2**

```

JOHN IS 21 YEARS OLD.
SUE IS 14 YEARS OLD.
MIKE IS 42 YEARS OLD.
PHIL IS 7 YEARS OLD.
MARY IS 34 YEARS OLD.

```

```

I HAVE 6 CATS 3 BIG, 3 SMALL.
I HAVE 10 HATS 2 BIG, 8 SMALL.
I HAVE 25 PENS 15 BIG, 10 SMALL.

```

LINE 70 to 120: Dimension a string and numeric array, then setup a loop to read the data into the arrays. (line 115 just prints out the results, and isn't necessary). Note that the data in line 50 is set up to alternate string value, numeric value, to match the way the loop is set.

LINE 140: This is the way to add data anywhere in the program. It's also useful if you have alot of data and want to use more than one program line.

LINE 150 to 250: Here's another way to organize data and loops. Note again that the order of the data in line 140 matches the way the loops are set up.

Now let's look at the subroutine. First, notice that P1 and P2 are both set to 1 in lines 20 and 30. P2 holds the location of the first character of the next piece of data to be read, while P1 searches for the comma which marks the end of each chunk of data. It works like this:

LINE 9000: Checks to see if the element of D\$ currently being looked at is a comma.

LINE 9010 and 9020: Keep "sliding" down D\$ until a comma is located.

LINE 9030: Once the comma is discovered, control transfers to this line, which takes the slice of D\$ between the last comma and the one just located and assigns it to R\$. (R\$ is the value transferred to the main routine in lines 100, 110, 190 and 220).

LINE 9040: Increases the value of P1 by one, so P1 now marks the beginning of the next section of data.

LINE 9050: Assigns the same value to P2, which will hold this location while P1 looks for the comma.

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TS2068 TIPS  
Compiled by Bill Johnson

Dear Bill:

The enclosed hardcopy of my dilemma is rather self explanatory, however just to clarify.

Line 10-I want "capacitance" to flash but only until the input is printed. Then it is to remain on the screen in a nonflashing situation.

```
10 PRINT FLASH 1;"CAPACITANCE"  
20 INPUT C: PRINT C  
30 PRINT: PRINT FLASH 0
```

What ever you can do to help would certainly be appreciated.

Sincerely,

Dave Trevor, Phoenix, AZ

---

Dear Dave:

Once an item is printed to the screen in the Flashing mode there is no way to just turn it off. As you know FLASH 1 turns on the FLASH mechanism. Every character typed after FLASH 1 will be printed to the screen flashing. FLASH 0 turns off the FLASH mechanism. This simply allows you to return to the nonflashing mode. All characters after the FLASH 0 will be printed to the screen normally.

There is no simple way to turn off a flashing character after they have been printed to the screen. The PRINT AT statement is a very powerful statement with many uses. Try this to the above program lines:

```
10 PRINT FLASH 1; AT 1,0;"CAPA  
CITANCE"  
20 INPUT C: PRINT C  
30 PRINT AT 1,0;"CAPACITANCE"
```

As you can see that LINE 30 goes back and rewrites "CAPACITANCE" in a nonFLASHING mode.

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## O-TO 203

```

202 NEXT f
203 PRINT AT 8,0; PAPER b: INK
7;"      ""      ";AT 9,4
-INT ((LEN g$)/2);g$""
"" IS "" PLAYING ""
"" "" ""

```

```

204 FOR x=1 TO 8: IF c(x)<=1 TH
EN NEXT x: GO TO 2000
210 LET n$=INKEY$
220 IF CODE n$>48 AND CODE n$<5
7 THEN LET d=VAL n$: IF c(d)>2 T
HEN PRINT AT c(d),d* 2+10; PAPER
6; INK b;"AB";AT c(d)+1,d* 2+10;"
CD": GO TO 1000

```

```

230 GO TO 210
1000 LET e=48+b
1005 LET b=b+1: LET n$="*"
1010 RESTORE 1020
1020 DATA 0,1,1,0,1,1,-1,1
1030 FOR z=1 TO 4: READ o1,o2
1040 FOR y=0 TO 3
1050 FOR x=0 TO 3
1060 LET n=x*-2+2*y: IF n=0 THEN
NEXT x: GO TO 1200
1070 IF ATTR (c(d)+n*o1,d* 2+10+n
*o2)=e THEN NEXT x: GO TO 1200

```

```

1080 NEXT y
1090 NEXT z
1100 LET c(d)=c(d)-2
1110 GO TO 200
1200 LET b=b-1
1210 FOR x=0 TO 3
1220 LET n=x*-2+2*y: PRINT AT c(
d)+n*o1,d* 2+10+n*o2; INK b; PAPE
R 6; FLASH 1;"AB";AT c(d)+n*o1+1
,d* 2+10+n*o2;"CD"

```

```

1230 NEXT x
1240 PRINT AT 11,0; PAPER b; INK
7;" WON """"
1250 PRINT AT 3,0; INK 7;"Press
'G'"" for the """"next game"
1260 PAUSE 0: IF INKEY$="g" OR I
NKEY$="G" THEN FOR x=6 TO 8: PRI
NT AT x,0;" "" : NEXT x: G
O TO 100
9998 STOP
9999 SAVE "COMBINATION" LINE 1

```

EDITOR'S NOTE: When you see "AB" this means graphic "AB". Press SHIFT and 9 to call up the G cursor and then enter the letters. Return to regular L cursor by pressing SHIFT and 9 again.

5 -

5 -

5 -

5 -

5 -

5 -

```

140 DIM c(8): FOR x=1 TO 8: LET
c(x)=17: NEXT x
145 LET b=1
200 IF b=3 THEN LET b=1
201 FOR f=1 TO 9: IF a$(b)(f)="
" THEN LET g$a$(b)( TO f-1): G

```

**TIMEX TIPS**  
by Chuck Dawson

**QUESTION:** What is the STR\$ function used for?

**ANSWER:** The argument (the expression following the keyword) of STR\$ must be a number or a variable that stands for a number (like X). The STR\$ takes that number and changes it to a string and assigns it to a string variable (like X\$). It can now be sliced or manipulated as a string. This would be a good way to look for the decimal and line it up for proper printing.

**QUESTION:** How do you use the commands "IN" and "OUT"?

**ANSWER:** These are usually used in machine code but Sinclair added them to the keyboard as part of BASIC. They are used to send and receive data on one of the 256 "PORTS" which are available. Usually, these ports are wired to external devices like modems and printers. As an example, the AERCO printer interface is wired to port 127. Data can be sent from a program to the printer by the command OUT 127, data. To keep things running smoothly, we follow with an IN 127. This can take the form LET B=IN 127 or if you don't need the IN data, simply RANDOMIZE IN 127. Try the following program without loading the printer driver program. Line 60 sends the carriage return.

```
10 INPUT LINE A$
20 FOR I = 1 TO LEN A$
30 LET A = CODE A$(I)
40 OUT 127,A: RANDOMIZE IN 127
50 NEXT I
60 OUT 127,13: RANDOMIZE IN 127
70 GO TO 10
```

Normally we would need to check a "busy line" before sending another letter, but BASIC is so slow compared to machine code that this is not needed in this case.

**QUESTION:** Can I delete a variable once it has been assigned?

**ANSWER:** Of course, CLEAR deletes all the variables, but I assume you meant just one variable at a time. This can be done with variables that were created by the DIMension function. Let's say you entered DIM X(35). Later you want to delete the X variable and recover the memory space. Just enter DIM X(0). This results in an error message because you cannot DIMension for zero. Before the computer gets around to checking for that it has already wiped out the old X variable. Within a program you can handle the error with an ON ERR CONTINUE before the DIM and ON ERR RESET after it.

---

If you have any questions that you would like answered please write to Chuck Dawson C/O WMJ DATA SYSTEMS. For a personal answer please include a SASE.

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## SCREEN\$

SCREEN\$ is a very useful function on the TS2068 but it has a few limitations that are well known. It has two principal uses. One is to SAVE a screen to tape. This is explained on pages 160 to 161 and appendix A of the manual. From these sources we learn that...

SAVE "PROG" SCREEN\$, really means

SAVE "PROG" CODE 16384,6912

The 6912 bytes of memory starting at address 16384 include the entire display file and all of its attributes. Hence all characters, including graphics and color, are SAVED by this procedure. We may use either of the above lines to do so.

SCREEN\$ has a second use and that is to identify individual characters, given their screen line, L, and column number, C, as in...

PRINT SCREEN\$ (L,C)

Used this way SCREEN\$ is color blind and a bit myopic. It can only recognize single-block characters whose CODE is between 32(space) and 127(copyright symbol). It cannot distinguish between inverse and normal characters, seeing them only as normal, and it does not see graphics at all. These characteristics of SCREEN\$ can be demonstrated by the following routine:

```
10 PRINT "CHAR- CODE SCREEN$
CODE LEN "
20 PRINT "ACTER OF (L,C)
SCREEN$ SCR."
30 PRINT " CHAR.
(L,C) (L,C)"
100 FOR n=5 TO 21
110 INPUT a$
120 PRINT AT n,1;a$;TAB 7;CODE
a$;TAB 15;SCREEN$ (n,1);TAB 22;C
ODE SCREEN$ (n,1);TAB 30;LEN SCR
EEN$ (n,1)
130 NEXT n
```

This routine when RUN will ask for the INPUT of a single-block character. Any character may be entered in response: normal, inverse, graphic, etc. The routine in turn will printout a single line of information on such character, all of which concerns its appearance to SCREEN\$.

The first two columns confirm the character that was INPUT and show its correct CODE if it has one. Inverses have no CODE and are assigned inverse control CODE 20. The last three columns show the way that SCREEN\$ sees this character: what character it sees, what CODE it assigns to the character, and its LENgth. This knowledge enables us to use the function properly.

FIGURE 1 is a screen dump of the results from a number of characters entered. The first character was a solid square made by using graphics mode and the 8-key. The second character was a solid square made using inverse video with the space bar. The third character was made in graphics mode using the 8-key. The fourth was a space from the space bar alone. Note that SCREEN\$, by the results in the last 3 columns, sees no difference. In all cases SCREEN\$ sees these characters as though all were made by the space bar alone.

CHAR- ACTER	CODE OF CHAR.	SCREEN\$ (L,C)	CODE SCREEN\$ (L,C)	LEN SCR. (L,C)
█	143		32	1
	20		32	1
	128		32	1
	32		32	1
*	42	*	42	1
*	20	*	42	1
*	94	*	94	1
*	20	*	94	1
*	137		0	0
*	141		0	0
*	65		65	1
*	144		65	1
*	66		66	1
*	145		66	1
*	97		97	1
*	98		98	1
*	61		61	1

Figure 1.



Next there are some mixed normal and inverse characters. To SCREEN\$, inverse and normal are both seen as normal. SCREEN\$ cannot tell the difference between them.

Then lump all kinds of graphics together. SCREEN\$ does not see them at all, because it reports them as having zero CODE and zero LEN, and empty string. Go back to the solid blocks at the beginning of the dump. SCREEN\$ saw them all as spaces as it gave them a LEN of one. Nothing at all and space are two different things, so SCREEN\$ differentiates to this extent.

### SCREEN\$ and PRINT POSITION

SCREEN\$ is used in many game programs to detect the presence of a particular character in the PRINT POSITION. This is the block on the 32 X 24 grid of the screen where the very next character will be printed. One of the system variables keeps track of this for the computer because the position constantly changes as the program runs.

To demonstrate PRINT POSITION we will start with a simple, common program that does nothing more than move a player's piece, or puck, around the screen by touching one of the 4 arrow keys. We will call the program FOUR-DIRECTION MOVEMENT...

```

10 LET L=10: LET C=15
30 LET LL=L: LET CC=C
40 LET L=L+(INKEY$="6" AND L<2
1)-(INKEY$="7" AND L>0)
50 LET C=C+(INKEY$="8" AND C<3
1)-(INKEY$="5" AND C>0)
60 PRINT AT L,C;
80 PRINT "*"
90 PRINT AT LL,CC;" " AND (LL<
>L OR CC<>C): PAUSE 0
100 GO TO 30

```

Notice that lines 60 and 80 usually appear as a single line reading:

PRINT AT L,C;"\*"

We have split it into the two separate instructions, where to print and what to print. The reason will soon be clear. Try it out as shown.

We are now ready to include some targets, a single character in this case, designated by b\$. The following additional lines will generate upto 35 such targets, distributed randomly over the screen:

```

2 INPUT b$
4 FOR n = 1 TO 35
6 PRINT AT 21*RND, 31*RND; b$
8 NEXT n

```

Now we can RUN the program again and when asked for b\$, enter the letter "o" or "x" for the time being. Move the puck about and it will wipe out the targets as it passes over them.

In a game program some additional action is usually taken when the puck hits a target. So we will add another line asking SCREEN\$ to look at the PRINT POSITION contained in line 60 and to take some special action if a target happens to be there before the puck is printed over the spot. Again, for the sake of simplicity, the action will be just a BEEP:

```

70 IF SCREEN$ (L,C)=b$ THEN
BEEP .05,25

```

Now RUN the program and enter any character with a CODE of 33 to 127. Enter the character, not the CODE number. Move the puck about and we should get a BEEP each time a character is hit. Try running the program and entering inverse characters or some graphic ones. They do not work, and now you know why.

We can also use SCREEN\$ in a negative sense by rewriting line 70 to read:

```

70 IF SCREEN$ (L,C)<>" " THEN
BEEP .05,25

```

Now we can use anything at all for a target as the field has only targets and spaces. There is one drawback. SCREEN\$ does not know the identity of the targets. It only knows that they are not spaces. In some game arrangements this is all that needs to be known.

Have you figured out the reason for the PAUSE 0 in line 90? Without it the GOTO construction fills up the PRINT POSITION in line 60 with the puck itself. SCREEN\$ reads the wrong character and BEEPS. With PAUSE, the program is held up until an arrow key is touched. In this way SCREEN\$ looks at the print position just before the puck gets to print in it. This is the essence of this kind of game program.

Line 70 is usually written in terms of CODE SCREEN\$ (L,C) instead of SCREEN\$ (L,C). To be consistent with this practice, the CODE number of the target character should be used after the = mark instead of its string counterpart. Either method works.

As we have seen, SCREEN\$ is limited in its capabilities. But, the TS2068 has at least four other methods of character identification that can be used in these situations. Some of these are not commonly known but will be discussed in coming issues of QuarTerS.

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A

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## REVIEW: TS2068 GRADEBOOK

by Dennis Silvestri

Are you a Teacher? Do you use a 2068 computer? Do you have a large number of classes with numerous students. Then the TS2068 GRADEBOOK program is for you. This machine code program allows you to load up to 255 classes at the same time with each class handled individually. You can have up to 46 students per class.

When you call up a class to get their averages every student will appear on one screen. The averages can be weighted or unweighted. Each class can have its own set of weights, which can be changed at anytime. All grades are numeric and each student has a special grade slot for extra credit and another slot for demerits. A missed test is not included in the average unless you wish it to be. Grades can be changed or deleted. Names can be changed or removed. Classes can be alphabetized. New students can be added to any class. Search for and list any student and their entire record on one screen. All classes or individual data can be printed on the Timex printer.

This program exceeds every other program I've researched or have used--WELL DONE MR. FISCHER.

The TS2068 GRADEBOOK program comes with complete documentation and is available for \$19.95 from Robert C. Fischer, 221 Scoggins St., Summerville, GA 30747.

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## OTHER BASIC COMMANDS

by Bill Johnson

Recently I have been converting many Timex/Sinclair programs for use with the Commodore 64. If you have ever tried to type in a program not written for the T/S computers you may have come upon some problems. I will discuss some of the problems I have had and how I overcame them.

If you have set-up a string of A\$(100,100) and want to print out a specific item from that string you would type in the following:

```
PRINT A$(x,y TO yy)
```

x represents the row, y represents the starting column and yy represents the ending column. If you wanted to print the 1st to 10th column of row 1 you would type in:

```
PRINT A$(x,y TO yy)
```

The use of this type of string is quite useful for storing information such as names, addresses, etc.

Now when I tried the above on the Commodore 64 it did not work. I looked in the C64 manual and found a bunch of words that a T/Ser would be unfamiliar with, such as: MID\$, RIGHT\$, and LEFT\$. Somewhere in the back of my mind I remembered these BASIC statements from my one college BASIC course. But since I have spent the last few years working with a ZX81 and TS2068 I did not have practical knowledge of these commands. A little bit of work was needed if I was to get the C64 version of my T/S program working without changing the complete program. This is what I found:

MID\$(A\$(3,10) is the equivalent of A\$(3 TO 12). To explain it further you start at the third character of the string and read the next ten. Let's use the following string, which is 19 characters long:

```
JOHNSON, WILLIAM M.  
1234567890123456789
```

The commands above would read the ten characters starting at the third, which would give you the following: HNSON, WIL

LEFT\$(A\$,10) is the equivalent of A\$(TO 10). This would give you the first 10 characters of a string. With this command it starts with the left most character of the string and works to the right for X characters. Using the above example this command would give you the following: JOHNSON, W

You could also use the T/S command: A\$(1 TO 10) to get the same results.

RIGHT\$(A\$,10) would give you the ten characters preceding the last of the string. The T/S command of A\$(9 TO) would give you the same results. In our example we would get the following:

```
WILLIAM M.
```

The T/S command of A\$(9 TO 19) would also give us the same results.

The next time you see a program in a magazine or book that looks like it is exactly the type of program you were looking for don't become downcast when you don't see a T/S version. With a little work on your part any BASIC program can be used on your T/S.

When typing in a program written for another computer you should have less trouble than typing a T/S program into another computer. The C64, like most other computers, does not let you know that something is wrong with a program line until you run it. The T/S is easy to use since it lets you know right away that your program line is incorrect. Also, if the command is not on the keyboard you can not use it, such as the examples above.

I hope that the above will help you in some way. Please write me and let me know what T/S BASIC topic you would like discussed.

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REVIEW: Zebra Joystick Adaptor  
by Peter Stawasz

MANUFACTURED BY:  
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78-06 Jamaica Ave  
Woodhaven, NY 11421  
1-718-296-2385

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PRICE: \$19.95

WARRANTY: 30 Days

Ever wish that there was an easier way of controlling your programs other than trying to remember which directional key to push--just before losing the game by simply pushing the wrong key?

Well, those days could be forever gone if you owned a ZEBRA JOYSTICK ADAPTOR. This little rectangular wafer attaches to the rear expansion port of any ZX81 or TS1000, and has its own expansion port so your computer will not be frozen to use just the adaptor itself.

The ZEBRA JOYSTICK, as the company calls it, uses any "Atari-type" joystick that you might happen to own, and utilizes a short machine language routine that has been safely POKed into a REM statement by the user, or stored above RAMTOP. It comes with the necessary programming to use the joystick function, or if you wish, you may convert your favorite keyboard games to joystick control with the programming supplied.

If you have games that you really have wanted to convert, i. e. the famous Timex Flight Simulator, or 3D Monster Maze, Packrabit, or others, you can be flying high almost immediately with the POKE statements that have been sent in by other users of the Adaptor and have been sent to you in the form of "patch kits".

All in all the Zebra Joystick has proven an excellent value and is guaranteed for a period of thirty days. For such a small piece of

hardware it does much to alleviate the frustrations of hitting the wrong key by giving the user the power of the joystick.

The only problem I have had thus far is the hazy explanation of keyboard to joystick conversion, which I am still experimenting with to understand how it is done. The unique feature I like is the tailoring of the joystick to a particular direction in order to fit the game being used. If you have a game that moves only left and right, you can program the joystick adaptor to recognize only the left and right functions of the joystick through the use of the programming provided. But it is not limited to just directions, one can tailor the adaptor to move in other directions with the possibility of firing in those directions also.

Now for other computer users that smirk when you say you own a TS1000 you can show them the power of your computer with the Zebra Joystick!

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**TASWORD 2 CHANGES  
FOR  
MULTIPLE COPIES**  
by Jack L. DeLisle

I would like to pass along some changes to the TASWORD 2 Word Processing program which make it much more versatile. When using the word processor to design forms or print newsletters, it is very easy to get multiple copies by making a few program modifications.

Stop the program after loading by pressing "symbol shift" and "stop". Exit to basic by pressing "b" and enter.

Change line 240 by adding the following commands immediately before the last statement (GO TO VAL "250"):

```
PRINT AT 14,0;"How many copies?";  
INPUT Y:
```

Enter new lines as follows:

```
265 FOR N=1 TO Y  
287 NEXT N
```

Next, redefine the graphics commands to give a "form feed". For my Mannesman-Tally, since it does not support elite type, I used graphics character 136 (shifted 7) and followed the instructions on page 20 of the manual. Place the appropriate graphics character for your program after the text is typed in for each page.

Now when entering the print mode the prompts also include "How many copies?". You must enter a quantity and the printer will continue to print until the desired quantity are printed.

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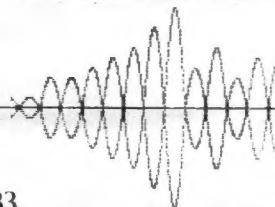
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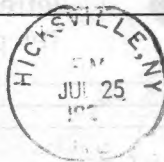
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